

## **REMARKS**

### ***Status of Claims***

Claims 38-40, 44, 46, and 48-123 are pending.

### ***Allowable Subject Matter***

Applicant thanks the Examiner for the indication that claims 38-40, 44, 46, 48-98, and 119-123 recite allowable subject matter.

### ***Interview Summary***

Applicant thanks the Examiner for the courtesies extended during a telephonic interview on December 7, 2007 with the undersigned attorneys. During the interview, the Examiner and representatives of the Applicant discussed the issues presented in the Applicant Initiated Interview Request Form submitted to the Examiner on December 5, 2007, a copy of which is attached hereto.

### ***Claim Rejections: 35 U.S.C. § 103***

Claims 99-118 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,994,820 to Suzuki et al. in view of U.S. Patent 5,530,919 to Tsuru et al. (“Tsuru”). The Examiner cited Tsuru as showing an antenna in a mobile phone, and cited Suzuki for the remainder of the claim limitations. Specifically, the Examiner took the position that Suzuki’s metal film 111 meets a recited antenna trace, Suzuki’s metal film/earth plate 202 meets the recited ground plane, and Suzuki’s pins 120 meet the recited vias that extend through a substrate and interconnect antenna traces located on opposing surfaces of the substrate.

But careful consideration of each rejected claim as a whole shows that Suzuki does not describe the claimed antenna structures.

Claims 99, 104, 109 and 112

Independent claims 99, 104, 109 and 112 each require “antenna traces located on opposing surfaces of said substrate interconnected by vias extending through said substrate.” But Suzuki fails to disclose both antenna traces (1) “located on opposing surfaces of said substrate” and (2) “interconnected by vias extending through said substrate”:

1. “antenna traces located on opposing surfaces of said substrate”

This limitation requires that two or more antenna traces be located on opposing surfaces of a substrate. The Examiner took the position that Suzuki’s metal film 111 and metal film 202 constitute the antenna traces. However, Suzuki’s metal film 202 cannot reasonably be regarded as an “antenna trace” as that term is used in the claims, because the claims draw distinctions between an antenna trace and a ground plane, such that a ground plane in the claims cannot be an antenna trace. For example, the claim refers to “said antenna trace proximate a ground plane” and to “an insulation region ... located between said antenna trace and said ground plane.” These phrases would be meaningless were a “ground plane” also an “antenna trace” in claims 99, 104, 109 and 112.

2. “antenna traces . . . interconnected by vias extending through said substrate”

This limitation requires that the antenna traces be connected by two or more vias extending through a substrate. The Examiner took the position that pins 120 meet the recited vias. However, pins are not vias. Vias are channels or openings in substrates; they are passageways or apertures. A pin is the opposite. Moreover, pins 120 do not extend through any substrate; rather, they extend through space and abut substrates 100, 200. And even if pin 130 is considered to extend through substrate 200, it is only one pin, and the claims require vias (plural) interconnecting the antenna traces.

Tsuru similarly does not teach these two limitations, so Suzuki and Tsuru, even if combined, still fail to teach these limitations, and this claim is allowable over the art of record for these two reasons alone.

Claim 116

Independent claim 116 requires “a first antenna trace formed on a face of said substrate” and “a second antenna trace formed on an opposing face of said substrate.” The Examiner took the position that Suzuki’s metal film 111 and metal film 202 constitute the antenna traces. However, Suzuki’s metal film 202 cannot reasonably be regarded as an “antenna trace” as that term is used in the claim, because the claim draws distinctions between an antenna trace and a ground plane, such that a ground plane in the claim cannot be an antenna trace. For example, claim 117 (dependent on claim 116) refers to an insulation region that is formed “between said first and second antenna traces and said ground plane.” Insofar as the claim requires that the insulation region be *between* both the first and the second antenna traces, on the one hand, and the ground plane on the other, the ground plane cannot be one of the two antenna traces.

Claim 116 also requires “a plurality of electrically conductive vias through said substrate, said plurality of vias coupling said first antenna trace to said second antenna trace.”

This limitation requires that the antenna traces be connected by two or more vias extending through a substrate. The Examiner took the position that pins 120 meet the recited vias. However, pins are not vias. Vias are channels or openings in substrates; they are passageways or apertures. A pin is the opposite. Moreover, pins 120 do not extend through any substrate; rather, they extend through space and abut substrates 100, 200. And even if pin 130 is considered to extend through substrate 200, it is only one pin, and the claim requires *a plurality of* vias coupling the antenna traces.

Tsuru similarly does not teach either of the limitations discussed above, so Suzuki and Tsuru, even if combined, still fail to teach those limitations, and the claim is allowable over the art of record for these two reasons alone.

Dependent claims 100-103 depend from claim 99; dependent claims 105-108 depend from claim 104; dependent claims 110-111 depend from claim 109; dependent

claims 113-115 depend from claim 112, and dependent claims 117-118 depend from claim 116. Insofar as claims 99, 104, 109, 112 and 116 are allowable, it follows that these dependent claims also are allowable.

### **CONCLUSION**

In view of the above remarks, Applicant believes pending claims 99-118 are in condition for allowance and asks the Examiner to reconsider and withdraw the rejection of those claims. (The Examiner allowed claims 38-40, 44, 46, 48-98, and 119-123 in the previous Action.)

Applicant invites the Examiner to contact the Applicant's Attorneys if questions arise regarding this Response or if issues remain prior to allowance.

Respectfully submitted,

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